

CLAIMS

What is claimed is:

1. A method of detecting defective markings on a semiconductor product, said method comprising:

5 inputting a reference character set corresponding to a semiconductor product to be tested;

extracting one or more features of actual character markings from the semiconductor product;

10 recognizing the actual character markings as characters using one or more of the extracted features to produce character data; and

comparing the character data to the reference character set.

2. A method according to claim 1, further comprising determining inadequate marking based on a result of comparing the character data to the reference character set.

3. A method according to claim 1, wherein inputting a reference character set comprises directly inputting the reference character set.

4. A method according to claim 3, wherein directly inputting the reference character set comprises using a keyboard to directly input characters corresponding to the reference character set.

5. A method according to claim 1, wherein inputting the reference character set comprises scanning a bar code, said bar code having information, including the reference character set, embedded therein.

6. A method according to claim 1, wherein the reference character set is recorded on a lot card.

7. A method according to claim 1, further comprising reading actual character markings of the product comprises using a Charge-Coupled Device (CCD) camera or a scanner to obtain an image of the character markings.

8. A method according to claim 1, wherein recognizing the actual character markings as characters comprises using an Optical Character Recognition (OCR) technique.

9. A method of detecting defective character markings on a semiconductor product

following assembly thereof, said method comprising:

inputting and storing a reference character set corresponding to the semiconductor product;

testing external terminals of said semiconductor product;

reading actual marking characters of the product as a character image;

recognizing the character image as characters to produce character data;

comparing the character data to said reference character set to detect defective product markings; and

selectively unloading good products and defective products based on the detecting result.

10. A method according to claim 9, wherein converting the character image into character data is performed using an Optical Character Recognition (OCR) technique.

11. A method according to claim 9, wherein the semiconductor products are provided to a testing unit in a lot.

12. A method according to claim 9, wherein the reference character set is recorded on a lot card.

13. A method according to claim 12, wherein the reference character set from the lot card is directly input using a keyboard.

14. A method according to claim 12, wherein the reference character set is recorded in a bar code and wherein the reference character set is input by scanning the bar code.

15. A method of detecting defective markings on a semiconductor product that has already been assembled and subjected to a visual test, said method comprising:

inputting a reference character set that represents proper character markings of the semiconductor product;

storing the reference character set in memory;
providing the semiconductor product to a testing unit in a loading tray;
transferring the product onto a carrier tape;
reading actual character markings of the product as a character image;
5 converting the character image into character data by recognizing the character image
as a set of characters using an Optical Character Recognition (OCR) technique;
comparing the character data to said reference character set to detect defective product
markings; and
unloading products with defective markings onto an unloading tray.

10 16. A method according to claim 15, wherein the reference character set is inputted by
scanning a bar code on a lot card.

15 17. A method according to claim 15, wherein the reference character set is input using a
keyboard.

20 18. An apparatus for detecting defective markings on a semiconductor product, said
apparatus comprising:
an input unit for inputting a reference character set corresponding to a semiconductor
product to be tested;

a memory unit configured to store the reference character set;

a readout system configured to read actual markings of the product to be tested as a
character image;

25 an Optical Character Recognition (OCR) unit configured to recognize the character
image as an actual character set; and

an arithmetic unit configured to compare the actual character set to the reference
character set.

30 19. An apparatus according to claim 18, wherein the input unit comprises a keyboard
configured to permit a user to directly input the character row into the apparatus.

20. An apparatus according to claim 18, wherein the input unit comprises a scanner
configured to input the character row by scanning a bar code.

21. An apparatus according to claim 18, wherein the readout system comprises a Charge-Coupled Device (CCD) camera or a scanner.

22. An apparatus according to claim 18, further comprising an unloading unit and a controller, wherein the controller is configured to control unloading of good and defective products from the unloading unit.

23. An apparatus according to claim 18, further comprising an external terminal testing unit configured to test external terminals of the semiconductor product.

24. An apparatus according to claim 18, further comprising a loading tray and a carrier tape, wherein the apparatus is configured to transfer the product to be tested from the loading tray to the carrier tape before the character image is obtained by the readout system.

25. A method of detecting defective markings on a semiconductor product, said method comprising:

extracting one or more features of actual character markings from the semiconductor product; and

recognizing the actual character markings as characters using one or more of the extracted features.

26. A method according to claim 25, further comprising classifying the product as defective if one or more of the actual character markings cannot be recognized as a character.